

REMARKS

Reconsideration of the present application, as amended, is respectfully requested in view of the following remarks. Claims 1-3 remain in the application and claims 4-20 are added after this Amendment is entered.

THE OFFICE ACTION:

Claims 2 and 3 are objected to for minor informalities.

Claims 1-3 stand rejected under 35 U.S.C. § 103(a) for obviousness over U.S. Patent No. 6,323,981 to Jensen.

THE NON-ART REJECTIONS:

Claims 2 and 3 Define the Symbol “τ.”

As amended, claims 2 and 3 now define the symbol “ τ ” as a time delay. The additions to claims 2 and 3 find support in the originally-filed specification, for example, from page 3, line 25 to page 4, line 17. Accordingly, withdrawal of the objections for informalities in claims 2 and 3 is respectfully requested.

THE ART REJECTIONS:

Claims 1-3 Patentably Distinguish Over Jensen.

The Examiner has rejected claims 1-3 for obviousness over Jensen. Basically, Jensen discloses an approach to detecting intermittent faults by sending a separate tone signal with the data and uses correlation to find the location of the fault. Notably, Jensen does not use correlation or anything else to determine the nature of the fault, or the degree to which it is present. For Jensen, the purpose of the additional tone from line monitoring equipment (LME) is to locate a fault (i.e., determine where it is) as opposed to detecting the nature of the fault.. It appears that this technique can only detect failures that are manifested as changes in gain (or amplitude). Such failures may, for example, be due to bad repeaters or cable breaks. Finally,

and most importantly, Jensen's technique requires traditional error detection such as bit-error-rates. This requires the transmission and reception of many, many bits. Typical measurement times given range, for example, from about a half hour to about eight hours (col. 4, lines 1-4). Jensen's fault location technique appears to take advantage of the fact that if you try to correlate two signals, you have to get the two signals to arrive in the same place at the same time. Jensen adjusts the timing of the tone over some range and, when there is a correlation spike, knows how far the real signal must have traveled to get the same time delay. Thus; Jensen can approximate where the fault lies. Jensen correlates the original tone with the tone that goes through the system.

In summary, Jensen's technique requires the sending of a separate test signal to locate the fault. Notably, Jensen does not identify the type of fault and apparently can only detect amplitude faults. The Jensen approach does not determine the quality of the signal or even the bit error rate. In fact, bit error rate testing, which involves the sending of a long stream of bits (e.g., hours of bits), in the transmission system terminals is required for the Jensen fault detection technique to work (col. 4, lines 17-22). At a minimum, the Jensen technique appears to require four second measurements, and many hours of such measurements (col. 4, line 56-64).

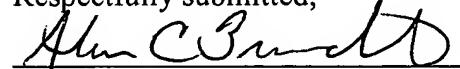
As amended, independent claim 1 includes "determining a quality of signal of the optical link based on the comparison without regard to a history of transmission errors." The additions to claim 1 find support in the originally-filed specification, for example, at page 2, lines 18-24, page 4, lines 21-26, page 5, lines 7-8 and 24-25, and page 5, lines 3-4.

The fault detection techniques disclosed in Jensen require correlating data from a comparator/correlator with transmission performance data (e.g., bit error rates) stored in the transmission system terminals, which essentially maintain a time history of transmission errors for diagnostic purposes (col. 4, lines 18-22). In Jensen, the "quality of signal" is established from the transmission performance data (e.g., bit error rate) and used for fault detection. Jensen does not disclose a technique for determining "quality of signal." Therefore, the applicants respectfully submit that independent claim 1 and claims dependent thereon (e.g., claims 2 and 3) are currently in condition for allowance.

CONCLUSION

Based on the foregoing amendments and remarks, the applicants believe that all of the claims in this case (i.e., claims 1-20) are now in a condition for allowance and an indication to that effect is earnestly solicited. Furthermore, if the Examiner believes that additional discussions or information might advance the prosecution of this case, the Examiner should feel free to contact the undersigned at the telephone number indicated below.

Respectfully submitted,



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